

3408

GUIDE TO APPLYING FOR APPROVAL (AIR): NOISE AND VIBRATION

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**Ministry of
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and Energy**

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Guide to Applying for Approval (Air): Noise and Vibration

November 1995

Noise and vibration impacts of proposed equipment/facilities are considered in the course of assessing applications for Certificates of Approval (Air), in accordance with Section 9 of the Environmental Protection Act. The purpose of this Guide is to assist proponents applying for Certificates of Approval (Air) for equipment/facilities that may produce noise or vibration impact in determining what information should be submitted. All applications for Certificates of Approval (Air) for equipment/facilities that produce noise and/or vibration must include the relevant Information Request Forms with the Mandatory Information. This Guide supplements the general information contained in

Guide for Applying for Approval (Air), Ministry of Environment and Energy, 1994

The following noise and vibration guidelines published by this Ministry contain additional technical information:

- NPC-205 Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban), October 1995
- NPC-206 Sound Levels due to Road Traffic, October 1995
- NPC-232 Sound Level Limits for Stationary Sources in Class 3 Areas (Rural), October 1995
- NPC-233 Information to be Submitted for Approval of Stationary Sources of Sound, October 1995
- NPC-207 Impulse Vibration in Residential Buildings (draft)

1. PROCEDURE

Within the review of the application for Certificate of Approval (Air), the noise and vibration component is assessed separately from the air component. In order to expedite the approval process, applicants should follow the steps set out below:

- According to Section 2, identify the category of the equipment/facility; also determine complexity;
- Complete the Detailed Information Request Form, attached to this document, if the proposed equipment/facility falls within one of the two categories identified in Sections 2.(1) and 2.(2);
- Complete the Simple Information Request Form, attached to this document, if the proposed equipment/facility does not fall within the two categories identified in Sections 2.(1) and 2.(2);
- For specially identified equipment/facilities, complete and submit the separate Information Request Form, attached to this document;
- The Simple Information Request Form is the minimum requirement in cases when the proposed equipment/facility is not further categorized;
- In case of complex or multiple sources, submit the information in the form of a report, prepared by a qualified acoustical or vibration consultant. Consult Publication NPC-233 for details on the technical requirements.

In general, the assessment of noise and vibration impacts is performed at critical points of reception*. Although the mandatory information is usually sufficient for the impact assessment, additional information may in some cases be required. As stated above, an acoustical report may be required in cases of complex or multiple sources.

- "Point of reception" means any point on the premises of a person where sound or vibration originating from other than those premises is received.

For the purpose of verifying compliance with Section 9 of the Act, the point of reception may be located on any of the following existing or zoned for future use premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship. For equipment/facilities proposed on premises such as nursing/retirement homes, rental residences, hospitals, and schools, the point of reception may be located on the same premises.

2. CATEGORIZATION OF NOISE SOURCES

Equipment/facilities that produce noise and vibration impact are categorized by their potential to create adverse effects. Two groups of noise/vibration sources are identified: the first group includes equipment/facilities which may have a potential adverse effect on points of reception located within a 500 m radius; the second group includes the most significant noise sources (equipment/facilities) which may have potential adverse effect on points of reception located within a 1000 m radius.

(1) Equipment/facilities with 500 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 500 m of the proposed equipment/facility, the applicants must complete and submit the Detailed Information Request Form along with the application for a Certificate of Approval (Air):

Aggregate Handling Facilities	Incinerators
Air Conditioning Units	Landfill/Composting/Waste Reduction Facilities
Air Make-up Units	Material Handling Facilities
Baghouses	Metal Working
Blow Moulding	Paint Spray Booths
Boilers	Pneumatic Equipment (used outdoors)
Burners	Pumps
Car Washes	Ready-Mix Plants
Chillers	Refrigeration Equipment
Compressors	Sandblasting
Concrete Manufacturing/Processing	Scrubbers
Condensers	Sewage Treatment Plants
Cooling Towers	Shredders
Cyclones	Soil/Groundwater Rehabilitation Systems
Dust Collectors	Stamping and Forging Presses
Electric Motors	Transformers
Engines - Diesel and/or Natural Gas (Continuous)	Tub Grinders/Wood Chippers/Debarking Drums
Engines - Diesel and/or Natural Gas (Standby)	Turbines (Steam)
Fans and Blowers (see also Fans and Blowers under (2))	Valves/Vents/Jets/Nozzles/Blowdown devices
Foundries	Water Treatment Plants
Furnaces	Welding
Garbage Compactors	Woodworking
Grain Dryers	

(2) Equipment/facilities with 1000 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 1000 m of the proposed equipment/facility, the applicants must complete and submit the Detailed Information Request Form along with the application for a Certificate of Approval (Air):

Arc Furnaces	Flares
Asphalt Plants	Firearm Ranges
Cogeneration Facility	Gas Turbines
Crushing Operations	Fans and Blowers - pressure blowers, large induced draft fans with flow rates in excess of 100,000 cfm or static pressures in excess of 5 inches water gauge.

(3) Special Equipment/facilities

Separate Information Request Forms have been prepared for equipment/facilities most frequently subject to noise and vibration impact assessment. These sources have an influence radius of 500 m.

INFORMATION REQUEST FORM

MANDATORY NOISE INFORMATION FOR
APPLICATIONS FOR CERTIFICATES OF APPROVAL (AIR)
DETAILED

Please submit the following information if the proposed equipment/facility falls within the 500 m and 1000 m categories identified on page 2 of this form or in Sections 2.(1) and 2.(2) of the Guide to Applying for Approval (Air): Noise and Vibration. Please check off the boxes below to indicate that the information has been attached.

- (1) Relevant specifications of the proposed equipment/facility emitting noise and vibration including manufacturer's make and model number, power rating, flow rates, noise emission data (if available), and all necessary supporting data.
- (2) Operating hours of the proposed equipment/facility (including start time and stop time) and sequence of operation of multiple and/or intermittent sources.
- (3) An up-to-date land use zoning designation plan, complete with legend and scale, of the area surrounding and within 500 m or 1000 m radius, depending on the source category, of the proposed equipment/facility (available from the Planning Department of the local municipality).
- (4) Scaled area location plan, (available from the Planning Department of the local municipality) indicating the nature of the neighbourhood around the equipment/facility, within 500 m or 1000 m radius including the location of adjacent buildings and structures, and the nearest point of reception. The location of the nearest existing residential receptor, along with other points of reception such as schools, hospitals, etc., in relation to the proposed equipment/facility must be shown on the plan.
- (5) Relevant architectural and mechanical drawings (scaled plans, elevations and sections) of the proposed equipment/facility. Drawings should show:
 - size and location of all exterior openings in the building(s) housing the proposed equipment/facility;
 - details of the construction materials forming the exterior envelope of the building(s) (eg. concrete block, brick, etc.);
 - details of the construction materials forming the interior surfaces of the building(s) (eg. dry wall, concrete, etc.);
 - orientation of all exterior openings with respect to the nearest point of reception.
- (6) Details of all noise control equipment recommended for the proposed equipment/facility including type, model no., manufacturer's name and acoustic performance specification data.

• "Point of reception" means any point on the premises of a person where sound or vibration originating from other than those premises is received.

For the purpose of verifying compliance with Section 9 of the Act, the point of reception may be located on any of the following existing or zoned for future use premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship. For equipment/facilities proposed on premises such as nursing/retirement homes, rental residences, hospitals, and schools, the point of reception may be located on the same premises.

CATEGORIZATION OF NOISE SOURCES

Equipment/facilities that produce noise impact are categorized by their potential to create adverse effects. Two categories of noise/vibration sources are identified: the first group includes equipment/facilities which may have a potential adverse effect on points of reception located within a 500 m radius; the second group includes the most significant noise sources (equipment/facilities) which may have potential adverse effect on points of reception located within a 1000 m radius.

(1) Equipment/facilities with 500 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 500 m of the proposed equipment/facility, the applicants must complete and submit the Detailed Information Request Form along with the application for a Certificate of Approval (Air):

Aggregate Handling Facilities	Incinerators
Air Conditioning Units	Landfill/Composting/Waste Reduction Facilities
Air Make-up Units	Material Handling Facilities
Baghouses	Metal Working
Blow Moulding	Paint Spray Booths
Boilers	Pneumatic Equipment (used outdoors)
Burners	Pumps
Car Washes	Ready-Mix Plants
Chillers	Refrigeration Equipment
Compressors	Sandblasting
Concrete Manufacturing/Processing	Scrubbers
Condensers	Sewage Treatment Plants
Cooling Towers	Shredders
Cyclones	Soil/Groundwater Rehabilitation Systems
Dust Collectors	Stamping and Forging Presses
Electric Motors	Transformers
Engines - Diesel and/or Natural Gas (Continuous)	Tub Grinders/Wood Chippers/Debarking Drums
Engines - Diesel and/or Natural Gas (Standby)	Turbines (Steam)
Fans and Blowers (see also Fans and Blowers under (2))	Valves/Vents/Jets/Nozzles/Blowdown devices
Foundries	Water Treatment Plants
Furnaces	Welding
Garbage Compactors	Woodworking
Grain Dryers	

(2) Equipment/facilities with 1000 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 1000 m of the proposed equipment/facility, the applicants must complete and submit the Detailed Information Request Form along with the application for a Certificate of Approval (Air):

Arc Furnaces	Flares
Asphalt Plants	Firearm Ranges
Cogeneration Facility	Gas Turbines
Crushing Operations	Fans and Blowers - pressure blowers, large induced draft fans with flow rates in excess of 100,000 cfm or static pressures in excess of 5 inches water gauge.

(3) Special Equipment/facilities

Separate Information Request Forms have been prepared for equipment/facilities most frequently subject to noise and vibration impact assessment. These sources have an influence radius of 500 m.

INFORMATION REQUEST FORM

**MANDATORY NOISE INFORMATION FOR
APPLICATIONS FOR CERTIFICATES OF APPROVAL (AIR)
SIMPLE**

Please submit the following information if the proposed equipment/facility does not fall within the 500 m and 1000 m categories* identified on page 2 of this form or in Sections 2.(1) and 2.(2) of the Guide to Applying for Approval (Air): Noise and Vibration. Please check off the boxes below to indicate that the information has been attached.

(1) An up-to-date land use zoning designation plan, complete with legend and scale, of the area surrounding and within 500 m or 1000 m radius, depending on the source category, of the proposed equipment/facility (available from the Planning Department of the local municipality).

(2) Scaled area location plan, (available from the Planning Department of the local municipality) indicating the nature of the neighbourhood around the equipment/facility, within 500 m or 1000 m radius including the location of adjacent buildings and structures, and the nearest point of reception. The location of the nearest existing residential receptor along with other points of reception such as schools, hospitals, etc., in relation to the proposed equipment/facility must be shown on the plan.

- "Point of reception" means any point on the premises of a person where sound or vibration originating from other than those premises is received.

For the purpose of verifying compliance with Section 9 of the Act, the point of reception may be located on any of the following existing or zoned for future use premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship. For equipment/facilities proposed on premises such as nursing/retirement homes, rental residences, hospitals, and schools, the point of reception may be located on the same premises.

CATEGORIZATION OF NOISE SOURCES

Equipment/facilities that produce noise impact are categorized by their potential to create adverse effects. Two categories of noise/vibration sources are identified: the first group includes equipment/facilities which may have a potential adverse effect on points of reception located within a 500 m radius; the second group includes the most significant noise sources (equipment/facilities) which may have potential adverse effect on points of reception located within a 1000 m radius.

(1) Equipment/facilities with 500 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 500 m of the proposed equipment/facility, the applicants must complete and submit the Detailed Information Request Form along with the application for a Certificate of Approval (Air):

Aggregate Handling Facilities	Incinerators
Air Conditioning Units	Landfill/Composting/Waste Reduction Facilities
Air Make-up Units	Material Handling Facilities
Baghouses	Metal Working
Blow Moulding	Paint Spray Booths
Boilers	Pneumatic Equipment (used outdoors)
Burners	Pumps
Car Washes	Ready-Mix Plants
Chillers	Refrigeration Equipment
Compressors	Sandblasting
Concrete Manufacturing/Processing	Scrubbers
Condensers	Sewage Treatment Plants
Cooling Towers	Shredders
Cyclones	Soil/Groundwater Rehabilitation Systems
Dust Collectors	Stamping and Forging Presses
Electric Motors	Transformers
Engines - Diesel and/or Natural Gas (Continuous)	Tub Grinders/Wood Chippers/Debarking Drums
Engines - Diesel and/or Natural Gas (Standby)	Turbines (Steam)
Fans and Blowers (see also Fans and Blowers under (2))	Valves/Vents/Jets/Nozzles/Blowdown devices
Foundries	Water Treatment Plants
Furnaces	Welding
Garbage Compactors	Woodworking
Grain Dryers	

(2) Equipment/facilities with 1000 metre Influence Radius

If the proposed equipment/facility is identified as, or closely resembles, one of the sources within the following list and any point of reception is within 1000 m of the proposed equipment/facility, the applicants must complete and submit the Detailed Information Request Form along with the application for a Certificate of Approval (Air):

Arc Furnaces	Flares
Asphalt Plants	Firearm Ranges
Cogeneration Facility	Gas Turbines
Crushing Operations	Fans and Blowers - pressure blowers, large induced draft fans with flow rates in excess of 100,000 cfm or static pressures in excess of 5 inches water gauge

(3) Special Equipment/facilities

Separate Information Request Forms have been prepared for equipment/facilities most frequently subject to noise and vibration impact assessment. These sources have an influence radius of 500 m.

INFORMATION REQUEST FORM

MANDATORY NOISE INFORMATION FOR
APPLICATIONS FOR CERTIFICATES OF APPROVAL (AIR)
DIESEL/GAS GENERATOR SETS

Please submit the following information if any existing residential receptors, or any other points of reception such as schools, hospitals, etc., or any residentially zoned lands, are within 500 m of the proposed equipment/facility. Please check off the boxes below to indicate that the information has been attached.

(1) Generator-set power rating, model no., manufacturer, noise emission rating (if available).

(2) An up-to-date land use zoning designation plan, complete with legend and scale, of the area surrounding and within 500 m radius of the proposed equipment/facility (available from the Planning Department of the local municipality).

(3) Scaled area location plan, (available from the Planning Department of the local municipality) indicating the nature of the neighbourhood around the equipment/facility, within 500 m radius including the location of adjacent buildings and structures, and the nearest point of reception. The location of the nearest existing residential receptor, along with other points of reception such as schools, hospitals, etc., in relation to the proposed equipment/facility must be shown on the plan.

(4) Scaled architectural and mechanical drawings (plans, elevations and sections) of the proposed equipment/facility installation. Drawings must show:

- size and location of all exterior openings in the mechanical room housing the diesel/gas generator-set, particularly the cooling air intake and exhaust openings;
- diesel/gas generator-set layout in the mechanical room, including all the associated equipment such as ventilation ducts, dampers, exhaust piping path to outlet, etc.;
- details of the construction materials forming the exterior envelope of the building (eg. concrete block, brick, etc.);
- details of the construction materials forming the interior surfaces of the building(s) (eg. dry wall, concrete, etc.);
- orientation of all exterior openings with respect to the nearest point of reception.

(5) Details of the proposed engine's combustion exhaust muffler (available from the muffler manufacturer) and any additional noise control measures proposed for the equipment/facility installation.

• "Point of reception" means any point on the premises of a person where sound or vibration originating from other than those premises is received.

For the purpose of verifying compliance with Section 9 of the Act, the point of reception may be located on any of the following existing or zoned for future use premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship. For equipment/facilities proposed on premises such as nursing/retirement homes, rental residences, hospitals, and schools, the point of reception may be located on the same premises.

INFORMATION REQUEST FORM

MANDATORY NOISE INFORMATION FOR
APPLICATIONS FOR CERTIFICATES OF APPROVAL (AIR)
FANS/AIR MOVING DEVICES

Please submit the following information if any existing residential receptors, or any other points of reception* such as schools, hospitals, etc., or any residentially zoned lands, are within 500 m or 1000 m** of the proposed equipment/facility. Please check off the boxes below to indicate that the information has been attached, and complete the table on the back of this page.

(1) At least one of the following must be provided:
- noise emission rating from the manufacturer;
- relevant specifications of the proposed equipment/facility - complete the Fan Information Table on the back of this page.

(2) Operating hours of the proposed equipment/facility (including start time and stop time) and sequence of operation of multiple and/or intermittent sources.

(3) An up-to-date land use zoning designation plan, complete with legend and scale, of the area surrounding and within 500 m or 1000 m** radius of the proposed equipment/facility (available from the Planning Department of the local municipality).

(4) Scaled area location plan, (available from the Planning Department of the local municipality) indicating the nature of the neighbourhood around the equipment/facility, within 500 m or 1000 m** radius including the location of adjacent buildings and structures, and the nearest point of reception*. The location of the nearest existing residential receptor, along with other points of reception such as schools, hospitals, etc., in relation to the proposed equipment/facility must be shown on the plan.

(5) Drawings of fan installation layout showing open intake and exhaust orientation relative to the nearest point of reception*.

(6) Details of all noise control measures recommended for the proposed equipment/facility including type, model no., manufacturer's name and acoustic performance specification data.

* "Point of reception" means any point on the premises of a person where sound or vibration originating from other than those premises is received.

For the purpose of verifying compliance with Section 9 of the Act, the point of reception may be located on any of the following existing or zoned for future use premises: permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds, and noise sensitive buildings such as schools and places of worship. For equipment/facilities proposed on premises such as nursing/retirement homes, rental residences, hospitals, and schools, the point of reception may be located on the same premises.

** 1000 m is for pressure blowers, and large induced draft fans with flow rates in excess of 100,000 cfm or static pressure in excess of 5 inches water gauge.

FAN INFORMATION TABLE

FAN TYPE	FAN DIAMETER (inches)	NUMBER OF BLADES	MOTOR RATING (horsepower)	FAN RPM (Revolutions per minute)	FLOW RATE (Cubic feet per minute)	STATIC PRESSURE (inches water Gauge)	PEAK STATIC EFFICIENCY (%)	NOTES ON FAN DUTY CYCLE
CENTRIFUGAL AIRFOIL								
CENTRIFUGAL FORWARD CURVED								
CENTRIFUGAL RADIAL BLADE								
CENTRIFUGAL PRESSURE BLOWER								
VANEAXIAL								
TUBEAXIAL								
PROPELLER								

Fan Manufacturer's Name: _____

Fan Manufacturer's Model No.: _____

Fan Manufacturer's Serial No.: _____

